

PATENT ABSTRACTS OF JAPAN

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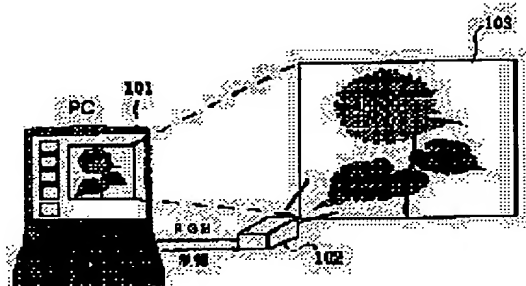
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(54) METHOD AND DEVICE FOR DISPLAY

(57)Abstract:

PROBLEM TO BE SOLVED: To perform image display by which the execution of effective presentation is made possible.

SOLUTION: Instruction information instructing so as to display a picture on the screen of a personal computer 101 and also an area (specified area) displayed on a screen 103 by picture information and a displayed picture is sent to a liquid crystal projector 102. The picture information is stored at an incorporated storing means at the liquid crystal projector 102, and the specified area instructed by the instruction information is read out and is displayed on the screen 103. The specified area is changed on the side of the personal computer 101 by for instance a mouse, and a desired area by a specified picture is selected and is displayed on the screen 103. As other instance, plural pictures are displayed on the screen of the personal computer 101, and any of them is selected and is displayed on the screen 103, and a color converting means is provided at a liquid crystal projector 102, so that the picture display with clear colors is made regardless of the kind of the screen 103.



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CLAIMS

[Claim(s)]

[Claim 1] Display characterized by receiving a specific field indication signal from this information processor, and displaying the specific field of this image information in the display which makes image information from an information processor input based on this specific field indication signal.

[Claim 2] Display characterized by receiving a display freeze signal from this information processor, and performing a display freezing treatment in the display which makes image information from an information processor input based on this display freeze signal.

[Claim 3] Display characterized by receiving color conversion information from this information processor, and performing and displaying color transform processing on this image information in the display which makes image information from an information processor input based on this color conversion information.

[Claim 4] It is the display characterized by being the information which depended for the aforementioned color conversion information on the content of the aforementioned image information in the claim 3.

[Claim 5] the 1st and the 2nd display which make image information of an information processor input -- having -- this information processor -- the 1st display property information on this 1st display -- supplying -- this -- a 2nd display top -- this -- the method of presentation characterized by indicating the display of the 1st display by simulation based on the 1st display property information

[Claim 6] Projected type display characterized by performing color transform processing according to the type of the display screen with which the picture of this projected type display is projected in the projected type display which makes image information from an information processor input.

[Claim 7] The AD translation means which considers a real-time video signal and an

information preservation medium as an input, and carries out the AD translation of this real-time video signal. The storage means which considers the output of this AD translation means as an input. The signal formal conversion means which carries out signal formal conversion of the output of this storage means if needed. A display means to display the output of this signal formal conversion means. An information reading means to read the information on this information preservation means, and the drawing processing means which carries out drawing processing based on the print-out of this information reading means. It is the display equipped with the above and is characterized by using this storage means as a storage function for saving the drawing result of this drawing processing means, and presenting a display.

DETAILED DESCRIPTION

[Detailed Description of the Invention]

[0001]

[The technical field to which invention belongs] this invention relates to display and the methods of presentation, such as a liquid crystal projector, and relates to the screen-display method of a personal computer especially.

[0002]

[Description of the Prior Art] In recent years, the personal computer (henceforth a personal computer) has spread with development of graphical interfaces, such as "Windows", and the presentation which carried out expansion projection of the screen by the liquid crystal projector etc. is performed briskly.

[0003] In this presentation, the picture of a personal computer screen is indicated by projection with display, such as a liquid crystal projector, as it is using exclusive software.

[0004]

[Problem(s) to be Solved by the Invention] By the way, when a documentation will take time and effort and it will perform an informal arrangement although the good presentation of appearance can be performed if the above-mentioned software only for presentations is used, I want to display simply using the data of the word-processing software to which are usually used, or spreadsheet software, without applying time and effort.

[0005] When the picture of the personal computer screen shown to the audience is displayed as it is, other pictures etc. cannot be checked but there is no other way but at hand moreover, to picture memorize, although there is a case where he wants to change

flexibly the screen shown as a presenter according to story expansion. Although this is not impossible, it has the danger of showing the mistaken picture and keeping the persuasive power of the whole presentation etc. by ****.

[0006] Furthermore, quality of image is also the important point of a presentation, and image display of the content beautiful with last thing is indispensable. Especially, in goods explanation of clothes etc., whenever importance is attached to the exact color reproduction and display changes, colors do not differ.

[0007] Although the quiescence function of an input picture is prepared by the Epson liquid crystal projector (ELP-3300) to the above problems using the memory in the equipment, the way of the presentation which utilized the quiescence function positively is not proposed.

[0008] The purpose of this invention solves this problem, mistakes the picture considered as a request, can display it easily [there is nothing and], and is to offer display and the method of presentation excellent in color-reproduction nature.

[0009]

[Means for Solving the Problem] In order to attain the above-mentioned purpose, this invention interlocks and controls the memory in display, a color conversion function, and the picture signal from this display-processing equipment based on the control signal from an information processor, and performs a logging display and slide show display of the specific field from a screen.

[0010] Moreover, this invention performs color transform processing of a picture so that a beautiful display can be performed according to the content of a picture.

[0011]

[Embodiments of the Invention] Hereafter, a drawing explains the operation gestalt of this invention.

[0012] the block diagram showing the display according [drawing 1] to this invention, and the 1st operation gestalt of the method of presentation -- it is -- 1 -- an information processor and 2 -- for a storage means and 5, as for control means and 7, a DA translation means and 6 are [display and 3 / an AD translation means and 4 / a microcomputer (henceforth a microcomputer) and 8] display meanses

[0013] The feature of this operation gestalt is the point of having enabled it to show an audience only a portion to show, by starting and displaying only the particular part of the pictures displayed on the screen of an information processor.

[0014] In drawing 1 , display 2 consists of the microcomputers 7 and the display meanses 8 of exchanging control information for the control means 6 which control the AD translation means 3, the storage means 4, the DA translation means 5, these AD

translation means 3, the storage means 4, and the DA translation means 5, and an information processor 1, and sending control information to these control means 6. The display meanses 8 are display devices, such as for example, liquid crystal display equipment, and plasma display equipment or CRT equipment.

[0015] An information processor 1 is a personal computer and outputs a video signal and a control signal. This control signal is a specific field indication signal it is directed that displays the specific field of the video signals outputted from an information processor 1.

[0016] The personal computer whose 101 drawing 3 is drawing showing the composition at the time of using a liquid crystal projector as this display 2, and is an information processor 1, and 102 are [a liquid crystal projector and 103] screens.

[0017] In this drawing, a liquid crystal projector 102 displays a color picture on a screen 103 with the color video signal from a personal computer 101. In this case, the portion surrounded by the black frame among the pictures displayed on the screen of a personal computer 101 is the color picture projected on a screen 103 by the liquid crystal projector 102.

[0018] Drawing 4 is drawing showing the example of a picture displayed on the screen of the personal computer 101 in drawing 3 , and shows the screen of "Windows" as an operating system of a personal computer to an example.

[0019] In this drawing, x of the starting point (upper-left-hand-corner section) of the block-definition wireframe shown by the black frame, a y-coordinate, and x of a terminal point (lower right corner) and a y-coordinate are displayed on a control window, and the information which shows a continuous out put or a single-engined output is displayed on it as the method of address output. If the depression of the button is carried out (it clicks by mouse operation etc. with a personal computer), the address of the starting point and a terminal point will be outputted continuously, and a continuous out put is outputted, only when the depression of the button of a single-engined output was carried out and the address of the starting point and a terminal point pushes, and it is a thing. Thus, the address of a block-definition wireframe is sent to a liquid crystal projector 102 among the screens of a personal computer 101.

[0020] Next, drawing 1 explains processing operation within a liquid crystal projector.

[0021] After the image output from an information processor 1 is supplied to the AD translation means 3 and used as digital image data, it is written in the storage means 4. In addition, this storage means 4 may be a frame memory. After the image data written in the storage means 4 are read to the basis of control of control means 6 and being changed into the video signal of an analog with the DA translation means 5, the display means 8 is supplied and image display is performed.

[0022] If it may become a polyphase output according to the specification of the display means 8, the output data of the storage means 4 exclude the DA translation means 5, and you may make it drive the display means 8 as digital image data, and they have various methods. Moreover, the AD translation means 3, the storage means 4, and the DA translation means 5 cannot be overemphasized by that three lines are prepared corresponding to each when a video signal is a three-primary-colors signal of R, G, and B.

[0023] The starting point address and the destination address of a block-definition wireframe make the read-out range of the storage means 4 the range decided at the above-mentioned starting point and an above-mentioned terminal point through control means 6, after being received with a microcomputer 7. Thus, as shown in drawing 3, only the picture of the specific field surrounded by the block-definition wireframe of the screen of a personal computer 101 will be projected and displayed on a screen 103.

[0024] In addition, when the above-mentioned continuous output is specified and the appointed field wireframe is moved with a mouse, it cannot be overemphasized that the picture field by which it is indicated by projection changes to a screen 103 by the real time. Thereby, a field to show it in the screen of a personal computer 101 can be expressed as a screen 103 at will.

[0025] Moreover, in drawing 1, since what is necessary is just to change the control method of control means 6 according to this when the storage means 4 is shown in display 2 from the first, additional parts are hardly needed and it can realize by the low cost.

[0026] Drawing 2 is drawing showing one example of a format of the transfer data of the specific field indication signal in drawing 1.

[0027] In this drawing, the specific field indication signal consists of an appointed field display instruction, and the starting point and a destination address. In addition, the data of your being data in which the width of face of not only the address of the starting point of the appointed field wireframe and a terminal point but the starting point address and the appointed field wireframe etc. is shown to transmit are natural. Moreover, as the transmission method of the control signal between an information processor 1 and display 2, DDC (Display Data Chanel), RS-232C, etc. which are standardized by VESA may be used, for example, or methods, such as other serial communication or parallel communication, can also be used.

[0028] Drawing 5 is drawing showing the display by this invention, and the 2nd operation gestalt of the method of presentation, and, as for a personal computer and 202, 201 is [display and 203] screens.

[0029] The feature of this operation gestalt is to choose one only of pictures of it as listening, and show them as it, an operator indicating two or more pictures which it is going to display by list, and grasping the whole. The whole basic composition is the same as that of what was shown in drawing 1 , in drawing 5 , utilizes the data hold function of the storage means 4 (drawing 1), and performs a still picture display.

[0030] First, in drawing 5 (a), two or more index pictures (what made the picture to display small) are indicated by list on the screen of a personal computer 201. If the picture for which it asks among these indexes pictures is clicked with a mouse, as shown in drawing 5 (b), the enlarged display of the picture will be filled to the screen of a personal computer 201. Of course, the data of this picture are supplied also to display 202, and are written in and read with the storage means 4, and it is indicated by projection at a screen 203. Here, if a phrase instruction is given to display 202 from a personal computer 201, at the moment, the renewal of data with the storage means 4 is forbidden, the image data then memorized remains as it is, and the picture is displayed on the screen 203. And as shown in drawing 5 (c), the screen of a personal computer 201 returns to the state of displaying the index picture of a basis. The data of the picture which showed display 202 to the storage means 4 by previous frieze instruction at drawing 5 (b) remain as it is, and this picture continues being displayed as it is on a screen 203. That is, only a desired picture will be displayed on a screen 203.

[0031] Since only a desired screen can be shown to an audience and a presenter can see a list screen by this, according to an audience's reaction, expansion of **** can be changed flexibly, and a persuasive presentation can be realized smoothly.

[0032] In addition, beforehand, the software for the above-mentioned operation is required for a personal computer 201, and it cannot be overemphasized in it that it is necessary to register image data.

[0033] Drawing 6 is a flow chart which shows processing operation of a personal computer 201 and display 202 in drawing 5 , left-hand side shows processing operation of a personal computer 201, and right-hand side shows processing operation of display 202, respectively.

[0034] In this drawing, first, a personal computer 201 displays an index picture on a screen, and indicates two or more pictures by list (Step 1001). And if the request picture of these list screens is chosen by click operation of a mouse (Step 1002), the frieze instruction for this selected picture being displayed on the whole screen of a personal computer 201 (Step 1003), and carrying out storage maintenance of the image data with the storage means 4 will be sent to display 202 (Step 1004).

[0035] On the other hand, if this frieze instruction is received from a personal computer

201 in display 202 (Step 2001), it checks whether this is a frieze instruction (Step 2002), and if it is a frieze instruction, a frieze instruction will once be lifted (Step 2003) and the image information memorized for the storage means 4 last time will be changed into new image information, i.e., the image information which is going to choose now and is going to display. Time standby is carried out more than the time which this change takes, for example, 1 perpendicular period, (Step 2004), and a frieze is performed after an appropriate time (Step 2005). And completion of a frieze sends the response information on the completion to a personal computer 201 (Step 2006).

[0036] thereby, in a personal computer 201 side, after incorporating the above-mentioned completion response of a frieze (Step 1005) and checking the completion of a frieze now (Step 1006), index image display is performed again (Step 1007), and the list display of two or more pictures is boiled, and is performed in the pictures The above flow chart is repeated.

[0037] here -- processing of Steps 1003-1007 -- an instant -- it is -- a presenter -- an instant -- a screen -- changing -- although it understands, an audience is not seen and does not have the influence of any on presentation execution

[0038] Thus, an operator indicating two or more pictures to display by list, and grasping the whole, for listening, since he can show only the one picture, he can perform the persuasive presentation in alignment with the intention of a presenter.

[0039] In addition, drawing 7 is drawing showing one example of the list image display in the screen of a personal computer 201, and an index picture is displayed within the limit of No1, No2, and

[0040] Moreover, although the simple change was explained above, of course, it can also perform realizing the so-called change effect by [, such as fade or day ZORUBU,] changing and inserting the picture for effects continuously between changes in a picture and a picture.

[0041] Drawing 8 is the block diagram showing the display by this invention, and the 3rd operation form of the method of presentation, 10 is a color conversion means and the explanation which attaches the same sign to the portion corresponding to drawing 1 , and overlaps is omitted.

[0042] The feature of this operation gestalt establishes the color conversion means 10 between the storage means 4 and the DA translation means 5, performs optimal color adjustment according to the content of a picture, and enables it to offer the image of an impression good for listening by this color conversion means 10 in this drawing.

[0043] In addition, the AD translation means 3 and the storage means 4, and the DA translation means 5 are established for every primary signal of R, G, and B, and

transform processing also of the color conversion means 10 is carried out for every primary signal of R, G, and B, and it is made for a hue, saturation, and lightness to become a desired value. Moreover, the color conversion means 10 has the LUT (look-up table) function, amends the gamma property of the display means 8, and realizes a linear gradation property. In addition, the color conversion means 10 of your preparing in the preceding paragraph of the storage means 4 is natural.

[0044] One example of conversion main point over the display image in the color conversion means 10 is shown in drawing 9, and the transfer characteristic is shown in drawing 10. Especially drawing 10 shows the example about a gradation property.

[0045] Since there are many signals which have the picture signal itself in saturation level, such as maximum or the minimum value, when display images are a character and a graphic subject, it enables it to perform graphic display which thought the saturation display as important, carried out like the property a which shows LUT input-output behavioral characteristics in drawing 10, and was carried out clearly in drawing 9 and drawing 10. Since there are many signals in halftone level when a display image is a natural drawing subject, a gradation display is thought as important, and it carries out like the property b which shows LUT input-output behavioral characteristics in drawing 10, and enables it to, perform a beautiful natural drawing display on the other hand. Moreover, to the picture to which natural drawing mingled with the character and the graphic, it considers as the property c which shows LUT input-output behavioral characteristics in drawing 10 so that the average display in [above-mentioned] two can be performed.

[0046] Moreover, natural drawing also changes a hue, saturation, etc. and enables it to perform beautiful beige expression in the time with much skin of people especially.

[0047] What is necessary is just to show the above-mentioned set point in drawing 11. Drawing 11 is a picture in drawing 7. A close-up of No.1 is taken. For example, if the picture shown in drawing 11 considers as natural drawing, the control window for an LUT setup is prepared on an index picture, the three alternative "a character and a graphic", "natural drawing", and "a character and graphic + natural drawing" will be set up, and the user will enable it to set either up according to the content of a picture to display into it. Drawing 11 shows the state where natural drawing was chosen.

[0048] Thus, what is necessary is just to send the data for color conversion with a frieze instruction to display 2 like the 2nd operation gestalt which chooses natural drawing, for example, was previously shown by drawing 5, in case it displays completely. Of course, if there is much data for color conversion, the data is beforehand registered into the color conversion means 10 etc., and sending from an information processor 1 is good

only also as a color conversion run command for natural drawings.

[0049] Moreover, this 3rd operation gestalt can realize similarly the specific field display of the 1st operation gestalt explained by drawing 3 and drawing 4.

[0050] The color conversion means 10 can perform optimal color adjustment according to the content of a picture as mentioned above, and the image of an impression good for listening can be offered.

[0051] Drawing 12 is the block diagram showing the display by this invention, and the 4th operation gestalt of the method of presentation, and 11 omits the explanation which ROM and 301 are personal computers, and a monitor and 12 attach the same sign to the portion corresponding to drawing 8, and overlaps.

[0052] The feature of this operation gestalt is in this drawing to have been able to be made to carry out the prior check of the image display state displayed with display 2.

[0053] Although the composition of this 4th operation gestalt is fundamentally [as the 3rd operation gestalt shown in drawing 8] the same, having ROM12 which built in the display property of display 2 differ. Data, such as the gradation property of the display means 8 and a color-reproduction range, are stored in this ROM12. This data is sent to the personal computer 301, and in case it displays in advance with a monitor 11, it is made to perform the display reflecting the value of this data. Of course, a personal computer 301 performs the data-conversion operation which also considered the display property of a monitor 11.

[0054] One example of the display image on the monitor 11 in the case of this prior display is shown in drawing 13. Although this is almost the same as what was shown in drawing 11, if it differs in that the "custom-made" item is established and this item is chosen, the bar for adjustment of a hue as shown in drawing 14, saturation, and lightness will be made to be displayed, for example. The value of this bar for adjustment, i.e., a level display, is changed by click operation of a mouse, and regeneration of the image data displayed in advance by the changed value is changed and carried out. The state of the picture displayed with display 2 can be checked in advance by this, and a user can adjust to a desired state further.

[0055] Moreover, in drawing 15, a screen setup is also included besides an LUT setup in a control window. In the case of the projected type display of a liquid crystal projector etc., a screen may be various chiefly for the sake of convenience of users [such as an OHP screen, and a feltboard or paper,] in addition to a supply. Since color-reproduction nature changes with types of a screen in projected type display, such a function is effective.

[0056] An image display state can be checked in advance as mentioned above, the gap

with the color assumed at the beginning and the color displayed in acting before the audience can be lost, if a gap of a color is corrected, the repeat work of checking on the screen for acting before the audience is simplified sharply, and the rehearsal before presentation execution can be supported powerfully.

[0057] Drawing 16 is the block diagram showing the display by this invention, and the 5th operation gestalt of the method of presentation, as for a data reading means and 22, an information preservation medium and 24 are change machines, and a drawing processing means and 23 have attached [21] the same sign to the portion corresponding to a pre-release-of-drawing side.

[0058] This operation gestalt enables it to also display the image information from this information preservation medium 23 in this drawing by forming the data reading means 21 and the drawing processing means 22 in display 2, and connecting the information preservation medium 23 to it. Therefore, since image display is possible by the information preservation medium 23 even if there is no information processor 1, the effort for conveyance of an information processor 1 is unnecessary.

[0059] Especially the feature of this 5th operation gestalt is as a storage means for drawing processing means 22 to use the storage means 4, and shares this with the output of the AD translation means 3. Thereby, low-cost-ization is realizable.

[0060] Two storage meanses which equipped the drawing processing means 22 with a capacity required to have prepared storage means 4' of exclusive use, to have switched with the change vessel 25 after changing into an analog video signal the image information read from now on with the DA translation means 26 of exclusive use, to have inputted into the storage means 4, and display on the display means 8 in the former as shown in drawing 17 were required.

[0061] On the other hand, with this 5th operation gestalt, the storage means 4 is shared from an information processor 1 to a video signal and from an information preservation medium to a video signal, and at least the part which can reduce a storage means has the merit whose cost cut is possible.

[0062] Next, operation of this 5th operation gestalt is explained.

[0063] First, the storage stored information preservation medium 23 is inserted in the data reading means 21 for data, such as image information. At this time, it is good to make it the change machine 24 switch to the drawing processing means 22 side automatically. The data of the inserted information preservation medium 23 are read based on instructions of a microcomputer 7, and the read data is written in the storage means 4 through the drawing processing means 22 and the change machine 24. Write-in control of the storage means 4 is performed by control means 6. Control means 6 operate

by the timing signal from the drawing processing means 22 etc.

[0064]

[Effect of the Invention] As explained above, according to this invention, based on the control signal from an information processor, gang control of the memory and color conversion function in display can be carried out to the picture signal from this information processor, the logging display of the specific field of a picture and a still picture display like a slide show can be performed by the beautiful quality of image according to the content of a picture, and a persuasive presentation can be realized with comparatively easy composition.

[0065] Moreover, according to this invention, by the prior display function based on the display property of display, the image display state in acting before the audience can be checked in advance, and the rehearsal before presentation execution can be supported powerfully.

TECHNICAL FIELD

[The technical field to which invention belongs] this invention relates to display and the methods of presentation, such as a liquid crystal projector, and relates to the screen-display method of a personal computer especially.

PRIOR ART

[Description of the Prior Art] In recent years, the personal computer (henceforth a personal computer) has spread with development of graphical interfaces, such as "Windows", and the presentation which carried out expansion projection of the screen by the liquid crystal projector etc. is performed briskly.

[0003] In this presentation, the picture of a personal computer screen is indicated by projection with display, such as a liquid crystal projector, as it is using exclusive software.

EFFECT OF THE INVENTION

[Effect of the Invention] As explained above, according to this invention, based on the

control signal from an information processor, gang control of the memory and color conversion function in display can be carried out to the picture signal from this information processor, the logging display of the specific field of a picture and a still picture display like a slide show can be performed by the beautiful quality of image according to the contents of a picture, and a persuasive presentation can be realized with comparatively easy composition.

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TECHNICAL PROBLEM

[Problem(s) to be Solved by the Invention] By the way, when a documentation will take time and effort and it will perform an informal arrangement although the good presentation of appearance can be performed if the above-mentioned software only for presentations is used, I want to display simply using the data of the word-processing software to which are usually used, or spreadsheet software, without applying time and effort.

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[0008] The purpose of this invention solves this problem, mistakes the picture considered as a request, can display it easily [there is nothing and], and is to offer

display and the method of presentation excellent in color-reproduction nature.

MEANS

[Means for Solving the Problem] In order to attain the above-mentioned purpose, this invention interlocks and controls the memory in display, a color conversion function, and the picture signal from this display-processing equipment based on the control signal from an information processor, and performs a logging display and slide show display of the specific field from a screen.

[0010] Moreover, this invention performs color transform processing of a picture so that a beautiful display can be performed according to the content of a picture.

[0011]

[Embodiments of the Invention] Hereafter, a drawing explains the operation gestalt of this invention.

[0012] the block diagram showing the display according [drawing 1] to this invention, and the 1st operation form of the method of presentation -- it is -- 1 -- an information processor and 2 -- for a storage means and 5, as for control means and 7, a DA translation means and 6 are [display and 3 / an AD translation means and 4 / a microcomputer (henceforth a microcomputer) and 8] display meanses

[0013] The feature of this operation form is the point of having enabled it to show an audience only a portion to show, by starting and displaying only the particular part of the pictures displayed on the screen of an information processor.

[0014] In drawing 1 , display 2 consists of the microcomputers 7 and the display meanses 8 of exchanging control information for the control means 6 which control the AD translation means 3, the storage means 4, the DA translation means 5, these AD translation means 3, the storage means 4, and the DA translation means 5, and an information processor 1, and sending control information to these control means 6. The display meanses 8 are display devices, such as for example, liquid crystal display equipment, and plasma display equipment or CRT equipment.

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[0017] In this drawing, a liquid crystal projector 102 displays a color picture on a screen 103 with the color video signal from a personal computer 101. In this case, the portion surrounded by the black frame among the pictures displayed on the screen of a personal computer 101 is the color picture projected on a screen 103 by the liquid crystal projector 102.

[0018] Drawing 4 is drawing showing the example of a picture displayed on the screen of the personal computer 101 in drawing 3 , and shows the screen of "Windows" as an operating system of a personal computer to an example.

[0019] In this drawing, x of the starting point (upper-left-hand-corner section) of the block-definition wireframe shown by the black frame, a y-coordinate, and x of a terminal point (lower right corner) and a y-coordinate are displayed on a control window, and the information which shows a continuous out put or a single-engined output is displayed on it as the method of address output. If the depression of the button is carried out (it clicks by mouse operation etc. with a personal computer), the address of the starting point and a terminal point will be outputted continuously, and a continuous out put is outputted, only when the depression of the button of a single-engined output was carried out and the address of the starting point and a terminal point pushes, and it is a thing. Thus, the address of a block-definition wireframe is sent to a liquid crystal projector 102 among the screens of a personal computer 101.

[0020] Next, drawing 1 explains processing operation within a liquid crystal projector.

[0021] After the image output from an information processor 1 is supplied to the AD translation means 3 and used as digital image data, it is written in the storage means 4. In addition, this storage means 4 may be a frame memory. After the image data written in the storage means 4 are read to the basis of control of control means 6 and being changed into the video signal of an analog with the DA translation means 5, the display means 8 is supplied and image display is performed.

[0022] If it may become a polyphase output according to the specification of the display means 8, the output data of the storage means 4 exclude the DA translation means 5, and you may make it drive the display means 8 as digital image data, and they have various methods. Moreover, the AD translation means 3, the storage means 4, and the DA translation means 5 cannot be overemphasized by that three lines are prepared corresponding to each when a video signal is a three-primary-colors signal of R, G, and B.

[0023] The starting point address and the destination address of a block-definition wireframe make the read-out range of the storage means 4 the range decided at the above-mentioned starting point and an above-mentioned terminal point through control

means 6, after being received with a microcomputer 7. Thus, as shown in drawing 3 , only the picture of the specific field surrounded by the block-definition wireframe of the screen of a personal computer 101 will be projected and displayed on a screen 103.

[0024] In addition, when the above-mentioned continuous out put is specified and the appointed field wireframe is moved with a mouse, it cannot be overemphasized that the picture field by which it is indicated by projection changes to a screen 103 by the real time. Thereby, a field to show it in the screen of a personal computer 101 can be expressed as a screen 103 at will.

[0025] Moreover, in drawing 1 , since what is necessary is just to change the control method of control means 6 according to this when the storage means 4 is shown in display 2 from the first, additional parts are hardly needed and it can realize by the low cost.

[0026] Drawing 2 is drawing showing one example of a format of the transfer data of the specific field indication signal in drawing 1 .

[0027] In this drawing, the specific field indication signal consists of an appointed field display instruction, and the starting point and a destination address. In addition, the data of your being data in which the width of face of not only the address of the starting point of the appointed field wireframe and a terminal point but the starting point address and the appointed field wireframe etc. is shown to transmit are natural. Moreover, as the transmission method of the control signal between an information processor 1 and display 2, DDC (Display Data Chanel), RS-232C, etc. which are standardized by VESA may be used, for example, or methods, such as other serial communication or parallel communication, can also be used.

[0028] Drawing 5 is drawing showing the display by this invention, and the 2nd operation form of the method of presentation, and, as for a personal computer and 202, 201 is [display and 203] screens.

[0029] The feature of this operation form is to choose one only of pictures of it as listening, and show them as it, an operator indicating two or more pictures which it is going to display by list, and grasping the whole. The whole basic composition is the same as that of what was shown in drawing 1 , in drawing 5 , utilizes the data-hold function of the storage means 4 (drawing 1), and performs a still picture display.

[0030] First, in drawing 5 (a), two or more index pictures (what made the picture to display small) are indicated by list on the screen of a personal computer 201. If the picture for which it asks among these indexes pictures is clicked with a mouse, as shown in drawing 5 (b), the enlarged display of the picture will be filled to the screen of a personal computer 201. Of course, the data of this picture are supplied also to display

202, and are written in and read with the storage means 4, and it is indicated by projection at a screen 203. Here, if a phrase instruction is given to display 202 from a personal computer 201, at the moment, the renewal of data with the storage means 4 is forbidden, the image data then memorized remains as it is, and the picture is displayed on the screen 203. And as shown in drawing 5 (c), the screen of a personal computer 201 returns to the state of displaying the index picture of a basis. The data of the picture which showed display 202 to the storage means 4 by previous frieze instruction at drawing 5 (b) remain as it is, and this picture continues being displayed as it is on a screen 203. That is, only a desired picture will be displayed on a screen 203.

[0031] Since only a desired screen can be shown to an audience and a presenter can see a list screen by this, according to an audience's reaction, expansion of **** can be changed flexibly, and a persuasive presentation can be realized smoothly.

[0032] In addition, beforehand, the software for the above-mentioned operation is required for a personal computer 201, and it cannot be overemphasized in it that it is necessary to register image data.

[0033] Drawing 6 is a flow chart which shows processing operation of a personal computer 201 and display 202 in drawing 5, left-hand side shows processing operation of a personal computer 201, and right-hand side shows processing operation of display 202, respectively.

[0034] In this drawing, first, a personal computer 201 displays an index picture on a screen, and indicates two or more pictures by list (Step 1001). And if the request picture of these list screens is chosen by click operation of a mouse (Step 1002), the frieze instruction for this selected picture being displayed on the whole screen of a personal computer 201 (Step 1003), and carrying out storage maintenance of the image data with the storage means 4 will be sent to display 202 (Step 1004).

[0035] On the other hand, if this frieze instruction is received from a personal computer 201 in display 202 (Step 2001), it checks whether this is a frieze instruction (Step 2002), and if it is a frieze instruction, a frieze instruction will once be lifted (Step 2003) and the image information memorized for the storage means 4 last time will be changed into new image information, i.e., the image information which is going to choose now and is going to display. Time standby is carried out more than the time which this change takes, for example, 1 perpendicular period, (Step 2004), and a frieze is performed after an appropriate time (Step 2005). And completion of a frieze sends the response information on the completion to a personal computer 201 (Step 2006).

[0036] thereby, in a personal computer 201 side, after incorporating the above-mentioned completion response of a frieze (Step 1005) and checking the

completion of a frieze now (Step 1006), index image display is performed again (Step 1007), and the list display of two or more pictures is boiled, and is performed in the pictures The above flow chart is repeated.

[0037] here -- processing of Steps 1003-1007 -- an instant -- it is -- a presenter -- an instant -- a screen -- changing -- although it understands, an audience is not seen and does not have the influence of any on presentation execution

[0038] Thus, an operator indicating two or more pictures to display by list, and grasping the whole, for listening, since he can show only the one picture, he can perform the persuasive presentation in alignment with the intention of a presenter.

[0039] In addition, drawing 7 is drawing showing one example of the list image display in the screen of a personal computer 201, and an index picture is displayed within the limit of No1, No2, and

[0040] Moreover, although the simple change was explained above, of course, it can also perform realizing the so-called change effect by [, such as fade or day ZORUBU,] changing and inserting the picture for effects continuously between changes in a picture and a picture.

[0041] Drawing 8 is the block diagram showing the display by this invention, and the 3rd operation form of the method of presentation, 10 is a color conversion means and the explanation which attaches the same sign to the portion corresponding to drawing 1 , and overlaps is omitted.

[0042] The feature of this operation form establishes the color conversion means 10 between the storage means 4 and the DA translation means 5, performs optimal color adjustment according to the contents of a picture, and enables it to offer the image of an impression good for listening by this color conversion means 10 in this drawing.

[0043] In addition, the AD translation means 3 and the storage means 4, and the DA translation means 5 are established for every primary signal of R, G, and B, and transform processing also of the color conversion means 10 is carried out for every primary signal of R, G, and B, and it is made for a hue, saturation, and lightness to become a desired value. Moreover, the color conversion means 10 has the LUT (look-up table) function, amends the gamma property of the display means 8, and realizes a linear gradation property. In addition, the color conversion means 10 of your preparing in the preceding paragraph of the storage means 4 is natural.

[0044] One example of conversion main point over the display image in the color conversion means 10 is shown in drawing 9 , and the transfer characteristic is shown in drawing 10 . Especially drawing 10 shows the example about a gradation property.

[0045] Since there are many signals which have the picture signal itself in saturation

level, such as maximum or the minimum value, when display images are a character and a graphic subject, it enables it to perform graphic display which thought the saturation display as important, carried out like the property a which shows LUT input-output behavioral characteristics in drawing 10 , and was carried out clearly in drawing 9 and drawing 10 . Since there are many signals in halftone level when a display image is a natural drawing subject, a gradation display is thought as important, and it carries out like the property b which shows LUT input-output behavioral characteristics in drawing 10 , and enables it to, perform a beautiful natural drawing display on the other hand. Moreover, to the picture to which natural drawing mingled with the character and the graphic, it considers as the property c which shows LUT input-output behavioral characteristics in drawing 10 so that the average display in [above-mentioned] two can be performed.

[0046] Moreover, natural drawing also changes a hue, saturation, etc. and enables it to perform beautiful beige expression in the time with much skin of people especially.

[0047] What is necessary is just to show the above-mentioned set point in drawing 11 . Drawing 11 is a picture in drawing 7 . A close-up of No.1 is taken. For example, if the picture shown in drawing 11 considers as natural drawing, the control window for an LUT setup is prepared on an index picture, the three alternative "a character and a graphic", "natural drawing", and "a character and graphic + natural drawing" will be set up, and the user will enable it to set either up according to the content of a picture to display into it. Drawing 11 shows the state where natural drawing was chosen.

[0048] Thus, what is necessary is just to send the data for color conversion with a frieze instruction to display 2 like the 2nd operation gestalt which chooses natural drawing, for example, was previously shown by drawing 5 , in case it displays completely. Of course, if there is much data for color conversion, the data is beforehand registered into the color conversion means 10 etc., and sending from an information processor 1 is good only also as a color conversion run command for natural drawings.

[0049] Moreover, this 3rd operation gestalt can realize similarly the specific field display of the 1st operation gestalt explained by drawing 3 and drawing 4 .

[0050] The color conversion means 10 can perform optimal color adjustment according to the content of a picture as mentioned above, and the image of an impression good for listening can be offered.

[0051] Drawing 12 is the block diagram showing the display by this invention, and the 4th operation gestalt of the method of presentation, and 11 omits the explanation which ROM and 301 are personal computers, and a monitor and 12 attach the same sign to the portion corresponding to drawing 8 , and overlaps.

[0052] The feature of this operation gestalt is in this drawing to have been able to be made to carry out the prior check of the image display state displayed with display 2.

[0053] Although the composition of this 4th operation gestalt is fundamentally [as the 3rd operation gestalt shown in drawing 8] the same, having ROM12 which built in the display property of display 2 differ. Data, such as the gradation property of the display means 8 and a color-reproduction range, are stored in this ROM12. This data is sent to the personal computer 301, and in case it displays in advance with a monitor 11, it is made to perform the display reflecting the value of this data. Of course, a personal computer 301 performs the data-conversion operation which also considered the display property of a monitor 11.

[0054] One example of the display image on the monitor 11 in the case of this prior display is shown in drawing 13 . Although this is almost the same as what was shown in drawing 11 , if it differs in that the "custom-made" item is established and this item is chosen, the bar for adjustment of a hue as shown in drawing 14 , saturation, and lightness will be made to be displayed, for example. The value of this bar for adjustment, i.e., a level display, is changed by click operation of a mouse, and regeneration of the image data displayed in advance by the changed value is changed and carried out. The state of the picture displayed with display 2 can be checked in advance by this, and a user can adjust to a desired state further.

[0055] Moreover, in drawing 15 , a screen setup is also included besides an LUT setup in a control window. In the case of the projected type display of a liquid crystal projector etc., a screen may be various chiefly for the sake of convenience of users [, such as an OHP screen, and a feltboard or paper,] in addition to a supply. Since color-reproduction nature changes with types of a screen in projected type display, such a function is effective.

[0056] An image display state can be checked in advance as mentioned above, the gap with the color assumed at the beginning and the color displayed in acting before the audience can be lost, if a gap of a color is corrected, the repeat work of checking on the screen for acting before the audience is simplified sharply, and the rehearsal before presentation execution can be supported powerfully.

[0057] Drawing 16 is the block diagram showing the display by this invention, and the 5th operation gestalt of the method of presentation, as for a data reading means and 22, an information preservation medium and 24 are change machines, and a drawing processing means and 23 have attached [21] the same sign to the portion corresponding to a pre-release-of-drawing side.

[0058] This operation gestalt enables it to also display the image information from this

information preservation medium 23 in this drawing by forming the data reading means 21 and the drawing processing means 22 in display 2, and connecting the information preservation medium 23 to it. Therefore, since image display is possible by the information preservation medium 23 even if there is no information processor 1, the effort for conveyance of an information processor 1 is unnecessary.

[0059] Especially the feature of this 5th operation form is as a storage means for drawing processing means 22 to use the storage means 4, and shares this with the output of the AD translation means 3. Thereby, low-cost-ization is realizable.

[0060] Two storage meanses which equipped the drawing processing means 22 with a capacity required to have prepared storage means 4' of exclusive use, to have switched with the change vessel 25 after changing into an analog video signal the image information read from now on with the DA translation means 26 of exclusive use, to have inputted into the storage means 4, and display on the display means 8 in the former as shown in drawing 17 were required.

[0061] On the other hand, with this 5th operation form, the storage means 4 is shared from an information processor 1 to a video signal and from an information preservation medium to a video signal, and at least the part which can reduce a storage means has the merit whose cost cut is possible.

[0062] Next, operation of this 5th operation form is explained.

[0063] First, the storage stored information preservation medium 23 is inserted in the data reading means 21 for data, such as image information. At this time, it is good to make it the change machine 24 switch to the drawing processing means 22 side automatically. The data of the inserted information preservation medium 23 are read based on instructions of a microcomputer 7, and the read data is written in the storage means 4 through the drawing processing means 22 and the change machine 24. Write-in control of the storage means 4 is performed by control means 6. Control means 6 operate by the timing signal from the drawing processing means 22 etc.

DESCRIPTION OF DRAWINGS

[Brief Description of the Drawings]

[Drawing 1] It is the block diagram showing the display by this invention, and the 1st operation gestalt of the method of presentation.

[Drawing 2] It is drawing showing one example of the data format of the control information in the 1st operation gestalt shown in drawing 1.

[Drawing 3] It is the block diagram showing the 1st operation gestalt of this invention using the liquid crystal projector as display.

[Drawing 4] It is drawing showing the example of a picture displayed on the personal computer screen in drawing 3 .

[Drawing 5] It is drawing showing the display by this invention, and the 2nd operation gestalt of the method of presentation.

[Drawing 6] It is the flow chart which shows operation of the personal computer in drawing 5 , and display.

[Drawing 7] It is drawing showing one example of a display in the personal computer screen in drawing 5 .

[Drawing 8] It is the block diagram showing the display by this invention, and the 3rd operation gestalt of the method of presentation.

[Drawing 9] It is drawing showing the main point of data conversion for every kind of display image in the 3rd operation gestalt shown in drawing 8 .

[Drawing 10] It is the property view showing the transfer characteristic to the kind of display image shown in drawing 9 .

[Drawing 11] It is drawing showing one example of the display image in the information processor in drawing 8 .

[Drawing 12] It is the block diagram showing the display by this invention, and the 4th operation gestalt of the method of presentation.

[Drawing 13] It is drawing showing one example of the content of a display in the control window displayed with the monitor in drawing 8 .

[Drawing 14] It is drawing showing one example of the sexual desire news displayed with the monitor in drawing 8 .

[Drawing 15] It is drawing showing other examples of the content of a display in the control window displayed with the monitor in drawing 8 .

[Drawing 16] It is the block diagram showing the display by this invention, and the 5th operation gestalt of the method of presentation.

[Drawing 17] It is the block diagram showing the conventional display and an example of the method of presentation.

[Description of Notations]

1 Information Processor

2 Display

3 AD Translation Means

4 Storage Means

5 DA Translation Means

6 Storage Means

7 Microcomputer

8 Display Means

10 Color Conversion Means

11 Monitor

12 ROM

21 Data Reading Means

22 Drawing Processing Means

23 Information Preservation Medium

101,201,301 Personal computer

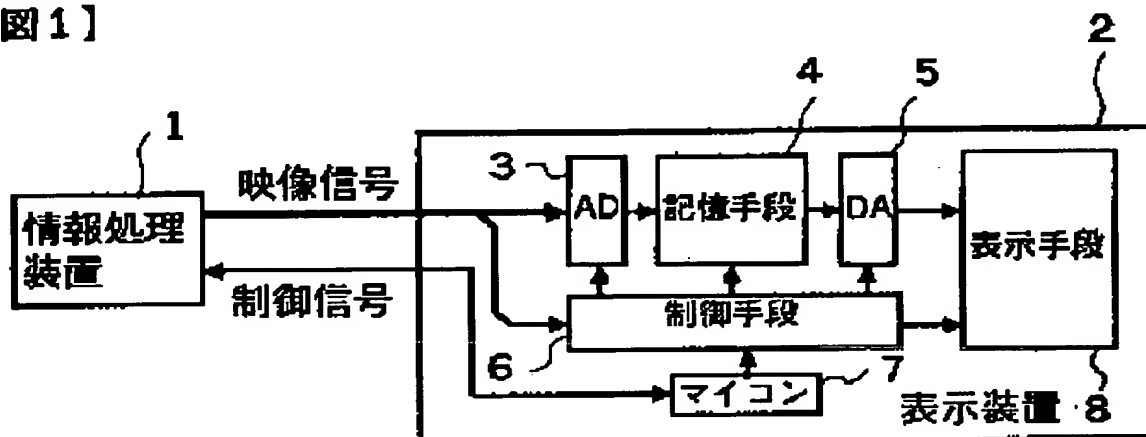
102,202 Liquid crystal projector

103,203 Screen

DRAWINGS

[Drawing 1]

【図 1】



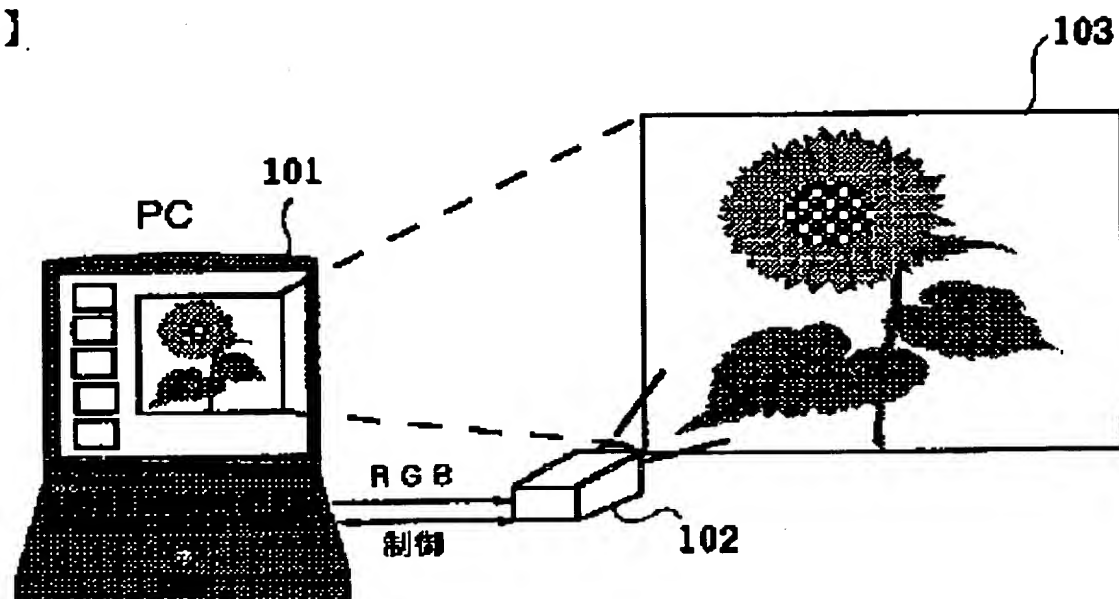
[Drawing 2]

【図 2】

指定領域 表示命令	始点アドレス	終点アドレス
--------------	--------	--------

[Drawing 3]

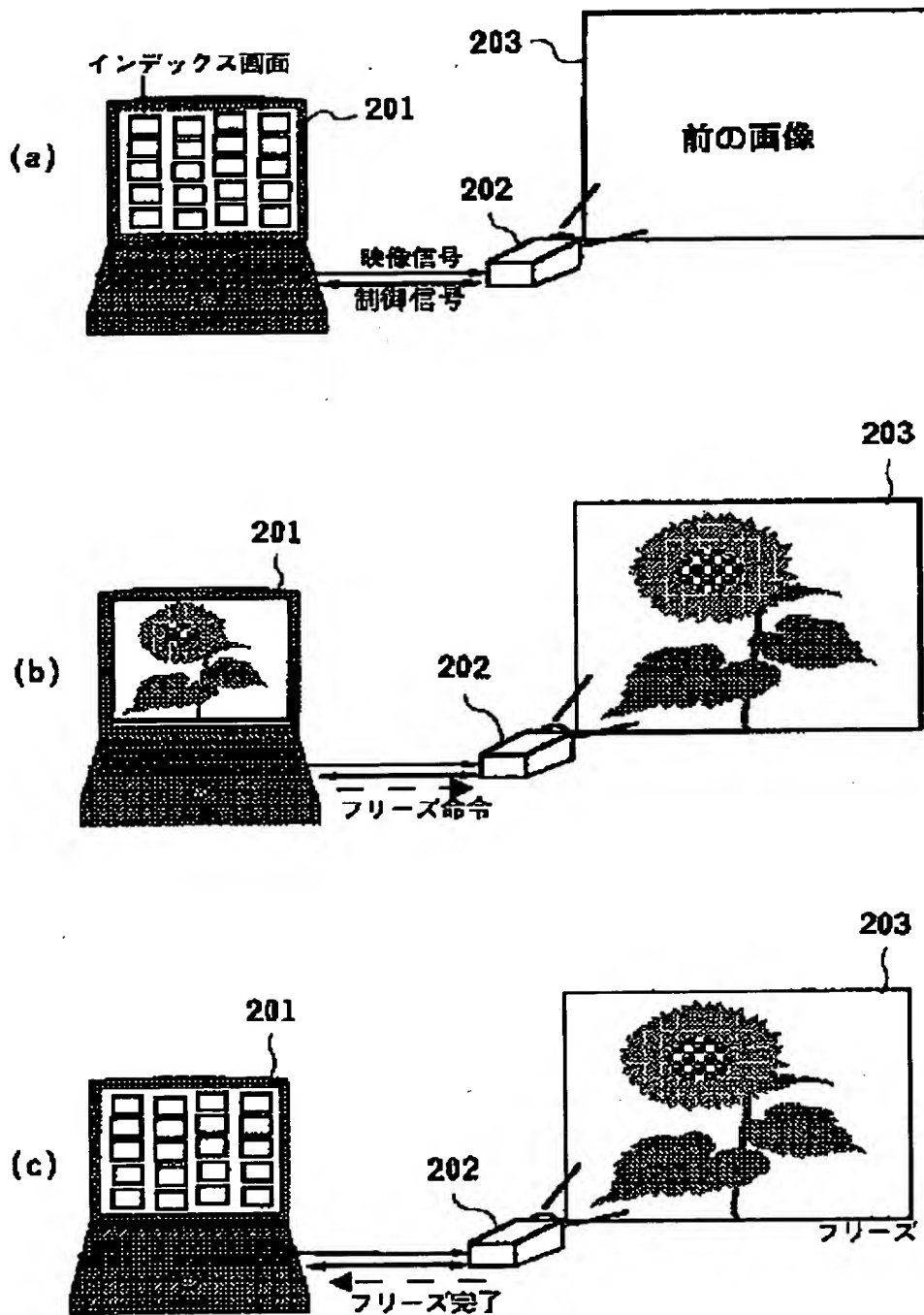
【図 3】



[Drawing 4]

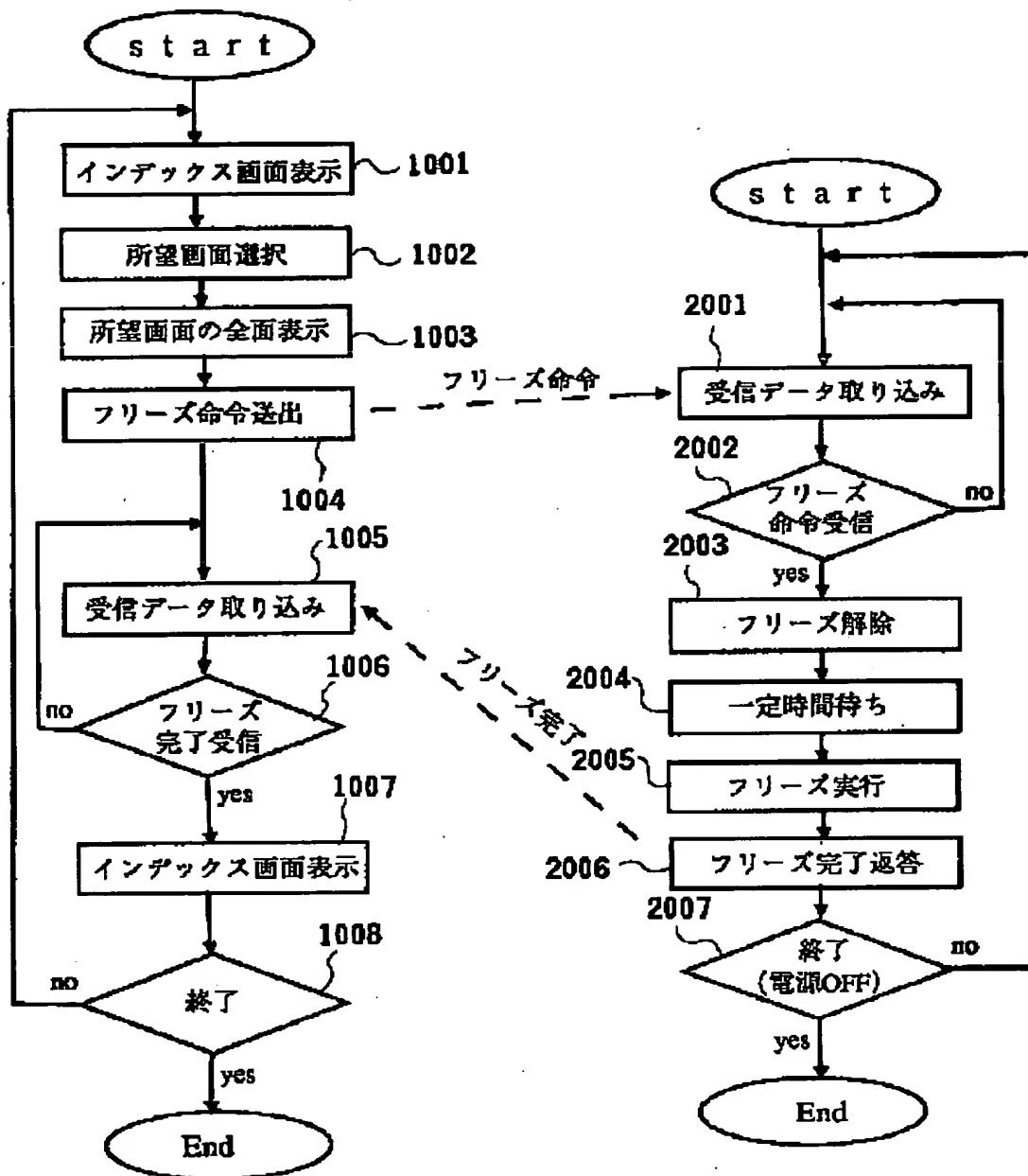
[Drawing 5]

【図5】



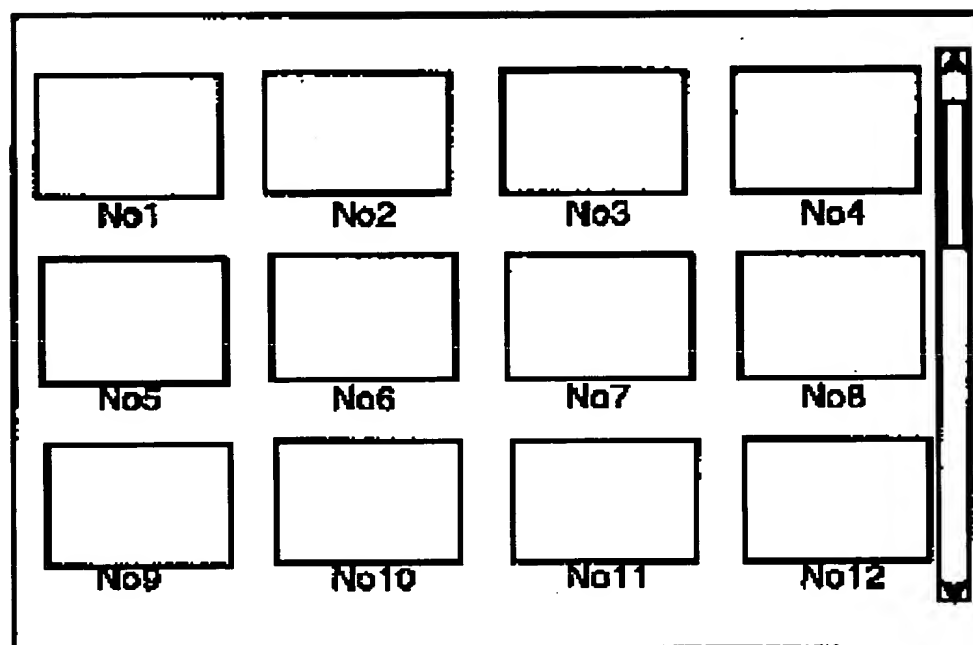
[Drawing 6]

【図6】



[Drawing 7]

【図 7】



[Drawing 8]

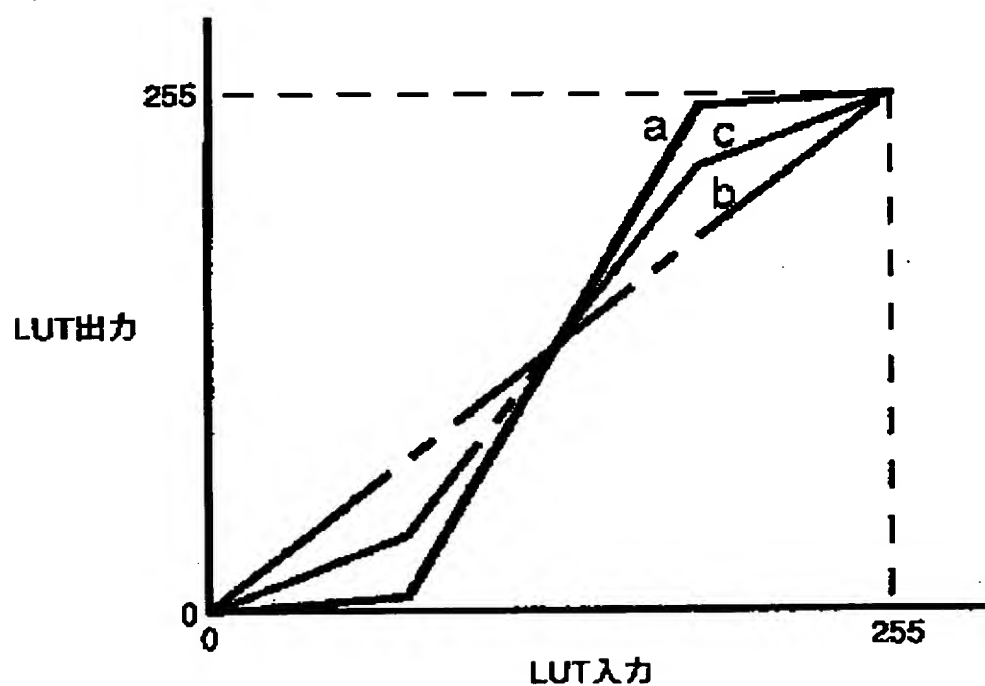
[Drawing 9]

【図 9】

表示画像	データ変換の主旨	LUTデータ例
文字、グラフィック主体	飽和表示重視	a
自然画主体	階調表示重視	b
文字、グラフィックと自然画	飽和および階調重視の折衷	c

[Drawing 10]

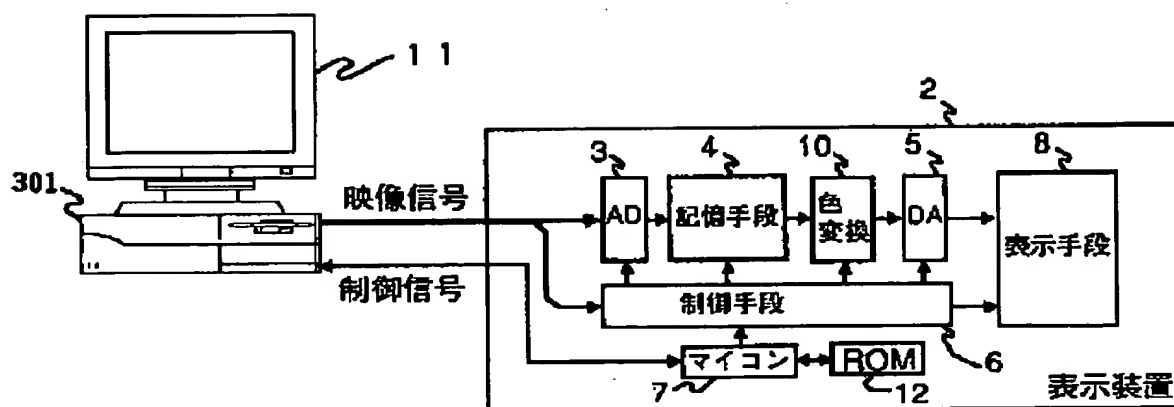
【図 10】



[Drawing 11]

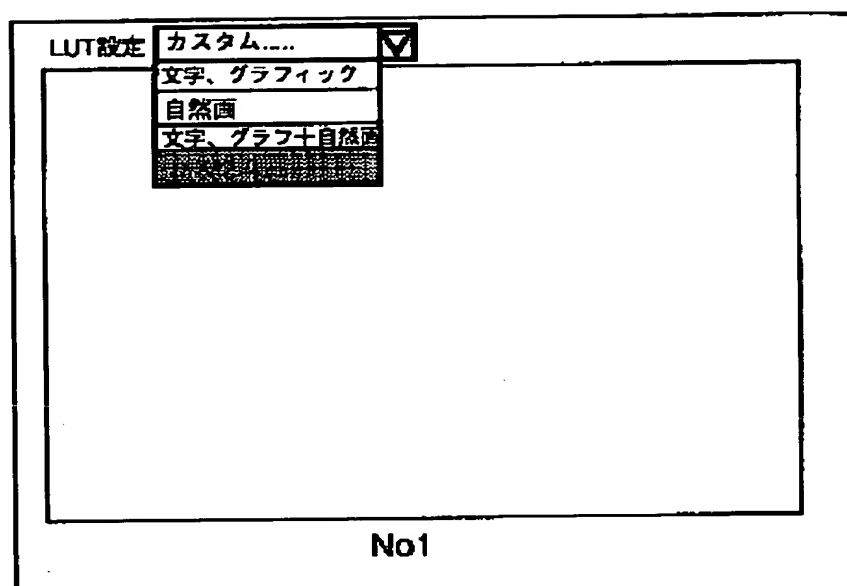
[Drawing 12]

【図 12】



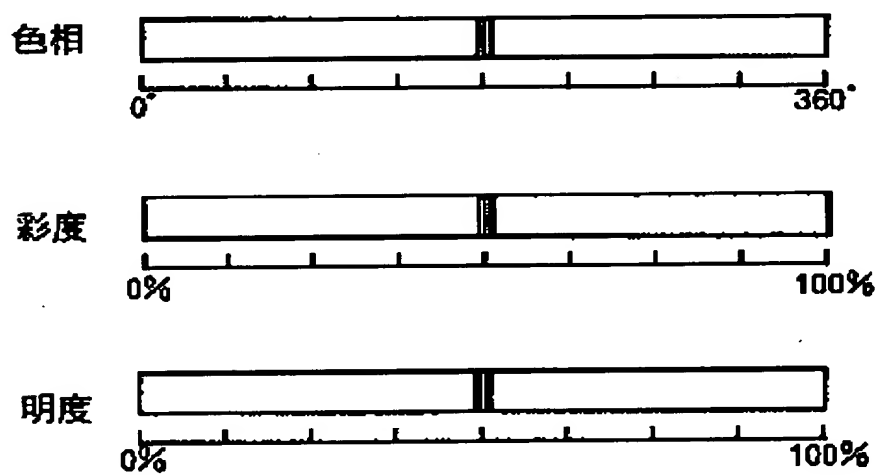
[Drawing 13]

【図13】



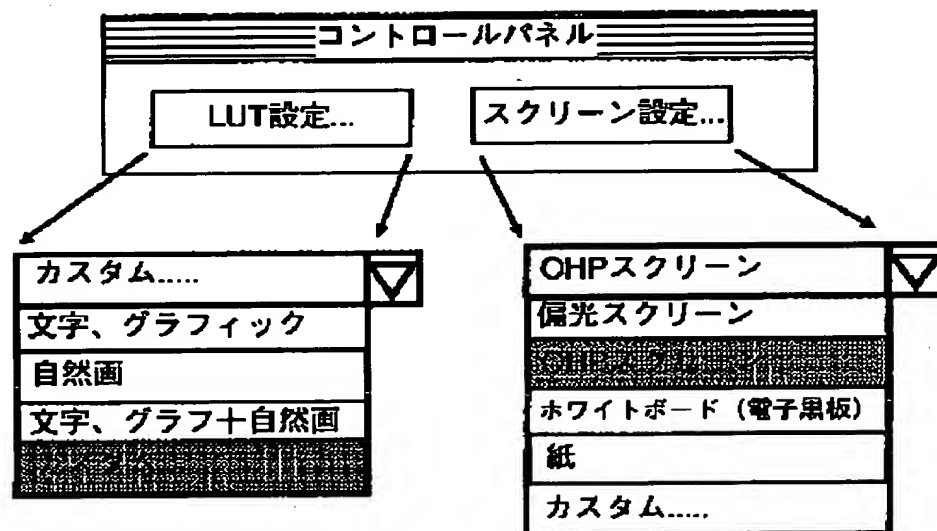
[Drawing 14]

【図14】



[Drawing 15]

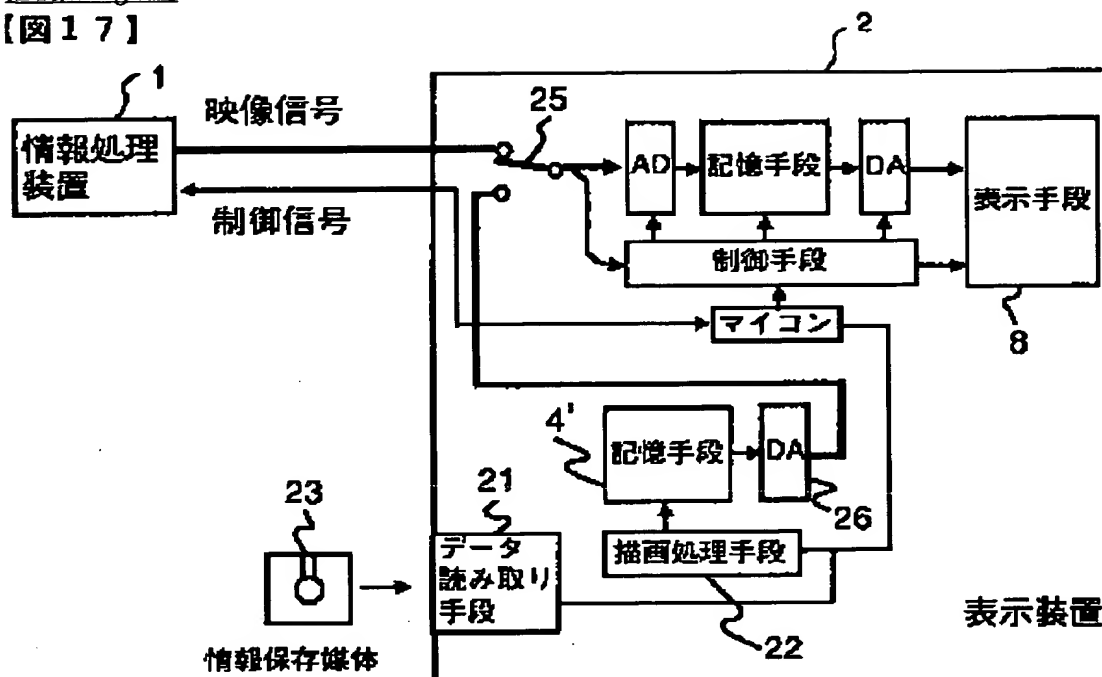
【図15】



[Drawing 16]

[Drawing 17]

【図 17】



[Translation done.]

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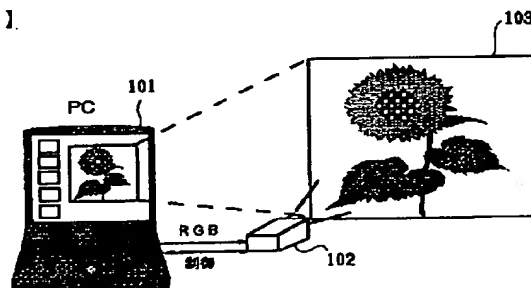
(54) 【発明の名称】 表示装置及び表示方法

(57) 【要約】

【課題】 効果的なプレゼンテーションの実行を可能とする画像表示を行なう。

【解決手段】 パソコン101の画面に画像を表示するとともに、その画像情報とこの表示画像でのスクリーン103に表示させるべき領域(特定領域)を指示する指示情報を液晶プロジェクタ102に送る。液晶プロジェクタ102では、この画像情報を内蔵の記憶手段に記憶し、指示情報で指示される特定領域を読み出してスクリーン103に表示させる。パソコン101側では、例えば、マウスにより、この特定領域を変更させることができ、これにより、所定の画像での希望する領域を選んでスクリーン103に表示させることができる。他の例としては、パソコン101の画面に複数の画像を表示し、そのいずれかを選択してスクリーン103に表示させたり、液晶プロジェクタ102に色変換手段を設け、スクリーン103の種類によらずに、きれいな色で画像表示されるようにする。

【図3】



【特許請求の範囲】

【請求項 1】 情報処理装置からの画像情報を入力情報とする表示装置において、

該情報処理装置から特定領域指示信号を受け取り、該特定領域指示信号に基づいて該画像情報の特定領域を表示することを特徴とする表示装置。

【請求項 2】 情報処理装置からの画像情報を入力情報とする表示装置において、

該情報処理装置から表示凍結信号を受け取り、該表示凍結信号に基づいて表示凍結処理を行なうことを特徴とする表示装置。

【請求項 3】 情報処理装置からの画像情報を入力情報とする表示装置において、

該情報処理装置から色変換情報を受け取り、該色変換情報に基づいて該画像情報に色変換処理を施して表示することを特徴とする表示装置。

【請求項 4】 請求項 3 において、前記色変換情報は、前記画像情報の内容に依存した情報であることを特徴とする表示装置。

【請求項 5】 情報処理装置の画像情報を入力情報とする第 1、第 2 の表示装置を有し、該情報処理装置に該第 1 の表示装置の第 1 の表示特性情報を供給し、該第 2 の表示装置上に該第 1 の表示特性情報に基づいて第 1 の表示装置の表示を模擬表示することを特徴とする表示方法。

【請求項 6】 情報処理装置からの画像情報を入力情報とする投写型の表示装置において、該投写型表示装置の画像が投影される表示スクリーンのタイプに応じた色変換処理を施すことを特徴とする投写型表示装置。

【請求項 7】 実時間映像信号と情報保存媒体を入力とし、該実時間映像信号を AD 変換する AD 変換手段と、該 AD 変換手段の出力を入力とする記憶手段と、該記憶手段の出力を必要に応じて信号形式変換する信号形式変換手段と、該信号形式変換手段の出力を表示する表示手段と、該情報保存手段の情報を読み取る情報読み取り手段と、該情報読み取り手段の出力情報に基づき描画処理する描画処理手段とからなる表示装置において、該描画処理手段の描画結果を保存して表示に供するための記憶機能として、該記憶手段を用いることを特徴とする表示装置。

【発明の詳細な説明】

【0001】

【発明の属する技術分野】本発明は、液晶プロジェクタなどの表示装置及び表示方法に係り、特に、パーソナルコンピュータの画面表示方法に関する。

【0002】

【従来の技術】近年、「Windows」などのグラフィカルインタフェースの発展とともに、パーソナルコンピュー

タ（以下、パソコンという）が普及してきており、その画面を液晶プロジェクタなどで拡大投写したプレゼンテーションが盛んに行なわれている。

【0003】かかるプレゼンテーションでは、専用ソフトウェアを用いてパソコン画面の画像をそのまま液晶プロジェクタなどの表示装置で投写表示している。

【0004】

【発明が解決しようとする課題】ところで、上記のプレゼンテーション専用ソフトウェアを用いれば、見栄えの良いプレゼンテーションが実行できるものの、資料作成には手間がかかり、インフォーマルな打ち合わせを行なう場合など、普段使い慣れているワープロソフトや表計算ソフトのデータを利用して、手間をかけずに、簡単に表示したいところである。

【0005】また、発表者としては、ストーリー展開に合わせて提示する画面を臨機応変に変えたい場合があるが、聴衆に見せているパソコン画面の画像をそのまま表示していると、他の画像などを確認することができず、手元の画像内容を予め充分記憶しておくほかない。これは、不可能ではないにしても、誤った画像を提示してプレゼンテーション全体の説得力などを削いでしまう危険性がある。

【0006】さらに、画質もプレゼンテーションの重要なポイントになっており、内容もさることながら、きれいな画像表示が必須である。特に、洋服などの商品説明では、正確な色再現が重要視されており、表示装置が変わる毎に色が異なるようなことがあってはならない。

【0007】上記のような問題に対して、エプソン社製の液晶プロジェクタ（ELP-3300）では、その装置内のメモリ機能を利用して入力画像の静止機能を設けているが、静止機能を積極的に活用したプレゼンテーションのやり方は提案されていない。

【0008】本発明の目的は、かかる問題を解消し、所望とする画像を誤りなくかつ簡単に表示することができ、色再現性に優れた表示装置及び表示方法を提供することにある。

【0009】

【課題を解決するための手段】上記目的を達成するために、本発明は、情報処理装置からの制御信号に基づいて、表示装置内のメモリ機能や色変換機能と該表示処理装置からの画像信号とを連動して制御し、画面からの特定領域の切出し表示やスライドショー表示を行なう。

【0010】また、本発明は、画像内容に応じてきれいな表示ができるように、画像の色変換処理を施す。

【0011】

【発明の実施の形態】以下、本発明の実施形態を図面により説明する。

【0012】図 1 は本発明による表示装置及び表示方法の第 1 の実施形態を示すブロック図であって、1 は情報処理装置、2 は表示装置、3 は AD 変換手段、4 は記憶

手段、5はDA変換手段、6は制御手段、7はマイクロコンピュータ（以下、マイコンという）、8は表示手段である。

【0013】この実施形態の特徴は、情報処理装置の画面に表示される画像のうちの特定部分だけを切り出して表示することにより、見せたい部分だけを聴衆に見せることができるようにした点である。

【0014】図1において、表示装置2はAD変換手段3、記憶手段4、DA変換手段5、これらAD変換手段3と記憶手段4とDA変換手段5とを制御する制御手段6、情報処理装置1と制御情報を交換してこの制御手段6に制御情報を送るマイコン7及び表示手段8とから構成されている。表示手段8は、例えば、液晶ディスプレイ装置やプラズマディスプレイ装置あるいはCRT装置などの表示デバイスである。

【0015】情報処理装置1は、例えば、パソコンであって、映像信号と制御信号とを出力する。この制御信号は、情報処理装置1から出力される映像信号のうちの特定の領域を表示するように指示する特定領域指示信号である。

【0016】図3はこの表示装置2として液晶プロジェクタを用いた場合の構成を示す図であって、101が情報処理装置1であるパソコン、102が液晶プロジェクタ、103がスクリーンである。

【0017】同図において、パソコン101からのカラー映像信号により、液晶プロジェクタ102がスクリーン103上にカラー画像を表示する。この場合、パソコン101の画面上に表示された画像のうち、黒枠で囲まれた部分が液晶プロジェクタ102によってスクリーン103に投写されるカラー画像である。

【0018】図4は図3でのパソコン101の画面に表示される画像例を示す図であって、パソコンの基本ソフトとしての「Windows」の画面を例に示すものである。

【0019】同図において、例えば、コントロールウィンドには、黒枠で示す領域指定ワイヤフレームの始点（左上角部）のx、y座標と終点（右下角部）のx、y座標とを表示し、アドレス出力の方法として、連続出力か単発出力かを示す情報を表示している。連続出力は、そのボタンを押下すると（パソコンでは、マウス操作などでクリック）、始点及び終点のアドレスが連続的に出力され、また、単発出力のボタンを押下すると、始点及び終点のアドレスが押したときだけ出力されるものである。このようにして、パソコン101の画面のうち、領域指定ワイヤフレームのアドレスが液晶プロジェクタ102に送られる。

【0020】次に、液晶プロジェクタ内での処理動作を図1により説明する。

【0021】情報処理装置1からの映像出力がAD変換手段3に供給され、デジタルの映像データとされた後、記憶手段4に書き込まれる。なお、この記憶手段4

は、例えば、フレームメモリであってもよい。記憶手段4に書き込まれた映像データは制御手段6の制御のもとに読み出され、DA変換手段5でアナログの映像信号に変換された後、表示手段8に供給されて画像表示が行なわれる。

【0022】記憶手段4の出力データは、表示手段8の仕様に合わせて多相出力になる場合もあれば、DA変換手段5を省き、デジタル映像データとして表示手段8を駆動するようにしてもよく、様々の方法がある。また、AD変換手段3、記憶手段4及びDA変換手段5は、映像信号がR、G、Bの3原色信号である場合には、夫々に対応して3系統設けられることはいうまでもない。

【0023】領域指定ワイヤフレームの始点アドレスと終点アドレスは、マイコン7で受け取られた後、制御手段6を介して、例えば、記憶手段4の読出し範囲を上記の始点と終点で決まる範囲とする。このようにして、図3に示すように、パソコン101の画面の領域指定ワイヤフレームで囲まれた特定領域の画像だけがスクリーン103に投写されて表示されることになる。

【0024】なお、上記の連続出力を指定し、指定領域ワイヤフレームをマウスで移動させると、実時間でスクリーン103に投写表示される画像領域が変化することはいうまでもない。これにより、パソコン101の画面中の見せたい領域を、思いのままに、スクリーン103で表示することができる。

【0025】また、図1において、もともと表示装置2に記憶手段4のある場合、制御手段6の制御方法をこれに合わせて変えるだけでよいので、追加部品がほとんどいらず、低コストで実現できる。

【0026】図2は図1での特定領域指示信号の転送データのフォーマットの具体例を示す図である。

【0027】同図において、特定領域指示信号は指定領域表示命令と始点、終点アドレスとから構成されている。なお、転送するデータは、指定領域ワイヤフレームの始点、終点のアドレスだけでなく、始点アドレスと指定領域ワイヤフレームの幅などを示すデータであってもよいことは勿論である。また、情報処理装置1と表示装置2との間の制御信号の伝送方法としては、例えば、VESAで規格化されているDDC（Display Data Channel）やRS-232Cなどを使用してもよいし、あるいはその他のシリアル通信あるいはパラレル通信などの方法を使用することもできる。

【0028】図5は本発明による表示装置及び表示方法の第2の実施形態を示す図であり、201はパソコン、202は表示装置、203はスクリーンである。

【0029】この実施形態の特徴は、オペレータが、表示しようとする複数の画像を一覧表示して全体を把握しつつ、聴取には、そのうちの1つの画像だけを選択して見せるようにすることにある。全体の基本構成は図1に

示したものと同様であり、図5では、記憶手段4（図1）のデータ保持機能を活用して、静止画表示を行なうものである。

【0030】まず、図5（a）において、パソコン201の画面に複数のインデックス画像（表示したい画像を小さくしたもの）を一覧表示する。これらインデックス画像のうち、所望する画像をマウスでクリックすると、図5（b）に示すように、パソコン201の画面いっばいにその画像が拡大表示される。勿論、この画像のデータが表示装置202にも供給され、記憶手段4で書き込まれて読み出され、スクリーン203に投写表示される。ここで、パソコン201から表示装置202にフリーズ命令を与えると、その瞬間、記憶手段4でのデータ更新が禁止され、そのとき記憶されている画像データがそのまま残り、その画像がスクリーン203に表示されている。そして、図5（c）に示すように、パソコン201の画面はもとのインデックス画像を表示する状態に戻る。表示装置202は、先のフリーズ命令により、記憶手段4に図5（b）に示した画像のデータがそのまま残っており、スクリーン203上にこの画像がそのまま表示され続ける。即ち、所望の画像だけがスクリーン203上に表示されることになる。

【0031】これにより、聴衆に所望の画面だけを見せ、発表者は一覧画面を見ることができ、聴衆の反応に応じて話しの展開を臨機応変に変えることができ、説得力あるプレゼンテーションが円滑に実現できる。

【0032】なお、パソコン201には、予め、上記動作のためのソフトウェアが必要であり、また、画像データを登録しておく必要があることはいうまでもない。

【0033】図6は図5におけるパソコン201と表示装置202の処理動作を示すフローチャートであって、左側がパソコン201の処理動作を、右側が表示装置202の処理動作を夫々示している。

【0034】同図において、まず、パソコン201は、画面にインデックス画像を表示して複数の画像を一覧表示する（ステップ1001）。そして、かかる一覧画面のうちの所望画像をマウスのクリック操作で選択すると（ステップ1002）、この選択された画像がパソコン201の画面全体に表示され（ステップ1003）、また、記憶手段4で画像データを記憶保持するためのフリーズ命令を表示装置202に送る（ステップ1004）。

【0035】一方、表示装置202では、パソコン201からこのフリーズ命令を受けると（ステップ2001）、これがフリーズ命令であるかどうかを確認し（ステップ2002）、フリーズ命令であれば、フリーズ命令を一旦解除し（ステップ2003）、前回記憶手段4に記憶した画像情報を新しい画像情報、即ち、現在選択して表示しようとする画像情報に変更する。この変更

要する時間、例えば、1垂直周期以上の時間待機し（ステップ2004）、しかる後、フリーズを実行する（ステップ2005）。そして、フリーズが完了すると、その完了の応答情報をパソコン201に送る（ステップ2006）。

【0036】これにより、パソコン201側では、上記のフリーズ完了応答を取り込み（ステップ1005）、これでフリーズ完了を確認した後（ステップ1006）、再びインデックス画像表示を行ない（ステップ1007）、画面で複数画像の一覧表示を行なう。以上のフローチャートを繰り返す。

【0037】ここで、ステップ1003～1007の処理は一瞬であり、発表者には、一瞬画面の切替わりはわかるものの、聴衆は見えることがなく、プレゼンテーション実行上何の影響もない。

【0038】このようにして、オペレータは、表示する複数の画像を一覧表示して全体を把握しつつ、聴取には、その1つの画像だけを見せることができるので、発表者の意図に沿った説得力あるプレゼンテーションが実行できる。

【0039】なお、図7はパソコン201の画面での一覧画像表示の一具体例を示す図であって、No1、No2、……の枠内にインデックス画像が表示される。

【0040】また、以上では、単純な切替えを説明したが、画像と画像との切替え間にフェードやディゾルブといった切替え効果用の画像を連続的に挿入することにより、いわゆる切替えエフェクトを実現することも勿論できる。

【0041】図8は本発明による表示装置及び表示方法の第3の実施形態を示すブロック図であって、10は色変換手段であり、図1に対応する部分には同一符号を付けて重複する説明は省略する。

【0042】同図において、この実施形態の特徴は、記憶手段4とDA変換手段5との間に色変換手段10を設け、この色変換手段10により、画像内容に合わせて最適な色調整を行なって、聴取に良い印象の映像を提供することができるようにしたものである。

【0043】なお、AD変換手段3及び記憶手段4、DA変換手段5はR、G、Bの原色信号毎に設けられており、色変換手段10もR、G、Bの各原色信号毎に変換処理し、色相や彩度、明度が所望の値になるようにする。また、色変換手段10はLUT（ルックアップテーブル）機能を有しており、表示手段8のガンマ特性を補正してリニアな階調特性を実現する。なお、色変換手段10は、記憶手段4の前段に設けてもよいことは勿論である。

【0044】色変換手段10での表示画像に対する変換主旨の一具体例を図9に示し、その変換特性を図10に示す。図10は、特に、階調特性についての例を示すものである。

【0045】図9及び図10において、表示画像が文字やグラフィック主体である場合には、画像信号自体が最大値か最小値といった飽和レベルにある信号が多いため、飽和表示を重視して、LUT入出力特性を図10に示す特性aのようにし、はっきりとした映像表示が行なえるようにする。一方、表示画像が自然画主体であるときには、中間調レベルにある信号が多いため、階調表示を重視して、LUT入出力特性を図10に示す特性bのようにし、きれいな自然画表示が行なえるようにする。また、文字、グラフィックと自然画が入り交じった画像

に対しては、上記2つの場合の平均的な表示ができるように、LUT入出力特性を図10に示す特性cとする。

【0046】また、自然画でも、特に、人の肌が多いときなどでは、色相や彩度などを変えてきれいな肌色表現が行なえるようにする。

【0047】上記の設定値は、例えば、図11に示すようにすればよい。図11は図7における画像No.1をクローズアップしたものである。例えば、図11に示す画像が自然画とすると、インデックス画像の上にLUT設定用のコントロールウィンドウを設けて、その中に“文

字・グラフィック”、“自然画”及び“文字・グラフィック+自然画”という3個の選択肢を設定し、表示する画像内容に応じてユーザがいずれかを設定できるようにしておく。図11は、自然画を選択した状態を示す。

【0048】このようにして、自然画を選んでおき、例えば、先に図5で示した第2の実施形態と同様に、全面表示する際、表示装置2に対してフリーズ命令とともに色変換用のデータを送ればよい。勿論、色変換用のデータが多ければ、予め色変換手段10などにそのデータを登録しておき、情報処理装置1から送るのは、自然

画用の色変換実行命令だけとしてもよい。

【0049】また、この第3の実施形態は、図3、図4で説明した第1の実施形態の特定領域表示でも同様にし実現できる。

【0050】以上のようにして、色変換手段10により、画像内容に合わせて最適な色調整を行ない、聴取に良い印象の映像を提供することができる。

【0051】図12は本発明による表示装置及び表示方法の第4の実施形態を示すブロック図であって、11はモニタ、12はROM、301はパソコンであり、図8

に対応する部分には同一符号を付けて重複する説明を省略する。

【0052】同図において、この実施形態の特徴は、表示装置2で表示する画像表示状態を事前確認できるようにしたことにある。

【0053】この第4の実施形態の構成は、図8に示した第3の実施形態と基本的には同じであるが、表示装置2の表示特性を内蔵したROM12を備えていることが異なる。このROM12には、表示手段8の階調特性や色再現範囲などのデータが格納されている。このデータ

をパソコン301に送っておき、モニタ11で事前表示する際に、このデータの値を反映した表示を行なうようにする。勿論、モニタ11の表示特性も加味したデータ変換演算をパソコン301で行なう。

【0054】この事前表示の際のモニタ11上の表示画像の具体例を図13に示す。これは図11に示したものとほぼ同じであるが、「カスタム」の項目が設けられている点があり、この項目を選択すると、例えば、図14に示すような色相、彩度及び明度の調整用バーが表示されるようにしている。かかる調整用バーの値、即ち、レベル表示をマウスのクリック操作で変更し、その変更した値によって事前に表示された画像データを変換し、再表示する。これにより、表示装置2で表示される画像の状態を事前に確認することができ、さらに、ユーザが所望の状態に調整することができる。

【0055】また、図15では、コントロールウィンドウに、LUT設定のほかに、スクリーン設定も含まれている。液晶プロジェクタなどの投写型の表示装置の場合、スクリーンが、専用品以外に、OHPスクリーンやホワイトボードあるいは紙などユーザの都合でさまざまな場合がある。投写型の表示装置では、スクリーンのタイプによって色再現性が異なるため、このような機能が有効である。

【0056】以上のようにして、画像表示状態を事前確認することができ、当初想定していた色と本番で表示した色とのずれをなくすことができ、色のずれを修正しては本番用のスクリーンで確認するといった繰り返し作業を大幅に簡略化して、プレゼンテーション実行に先立つリハーサルを強力に支援できる。

【0057】図16は本発明による表示装置及び表示方法の第5の実施形態を示すブロック図であって、21はデータ読取手段、22は描画処理手段、23は情報保存媒体、24は切換器であり、前出図面に対応する部分には同一符号を付けている。

【0058】同図において、この実施形態は、表示装置2にデータ読取手段21及び描画処理手段22を設け、情報保存媒体23を接続することにより、この情報保存媒体23からの画像情報も表示することができるようにしたものである。従って、情報処理装置1がなくても、情報保存媒体23により画像表示ができるため、情報処理装置1の搬送のための労力が不要である。

【0059】特に、この第5の実施形態の特徴は、描画処理手段22用の記憶手段として、記憶手段4を用いることにあり、これをAD変換手段3の出力と共用する。これにより、低コスト化が実現できる。

【0060】従来では、図17に示すように、描画処理手段22には、専用の記憶手段4'を設け、これから読み出される画像情報を専用のDA変換手段26でアナログ映像信号に変換した後、切換器25で切り換えて記憶手段4に入力しており、表示手段8に表示するのに必要

な容量を備えた記憶手段が2系統必要であった。

【0061】これに対し、この第5の実施形態では、記憶手段4を情報処理装置1からの映像信号と情報保存媒体からの映像信号とに共用するものであり、記憶手段を低減できる分だけでも、コストダウンができるメリットがある。

【0062】次に、この第5の実施形態の動作について説明する。

【0063】まず、画像情報などのデータを記憶保存した情報保存媒体23をデータ読取手段21に挿入する。このとき、切換器24が自動的に描画処理手段22側に切り換わるようにするとよい。挿入された情報保存媒体23のデータを、例えば、マイコン7の指令に基づいて読み取り、その読み取ったデータを描画処理手段22及び切換器24を介して記憶手段4に書き込む。記憶手段4の書き込み制御は制御手段6によって行なわれる。制御手段6は、描画処理手段22からのタイミング信号などにより、動作する。

【0064】

【発明の効果】以上説明したように、本発明によれば、情報処理装置からの制御信号に基づいて、表示装置内のメモリ機能や色変換機能を該情報処理装置からの画像信号と連動制御し、画像の特定領域の切出し表示やスライドショーのような静止面表示を画像内容に応じたきれいな画質で行なうことができ、比較的簡単な構成で説得力あるプレゼンテーションが実現できる。

【0065】また、本発明によれば、表示装置の表示特性に基づいた事前表示機能により、本番での画像表示状態を事前確認することができ、プレゼンテーション実行に先立つリハーサルを強力に支援することができる。

【図面の簡単な説明】

【図1】本発明による表示装置及び表示方法の第1の実施形態を示すブロック図である。

【図2】図1に示す第1の実施形態での制御情報のデータフォーマットの一例を示す図である。

【図3】表示装置として液晶プロジェクタを用いた本発明の第1の実施形態を示す構成図である。

【図4】図3でのパソコン画面に表示される画像例を示す図である。

【図5】本発明による表示装置及び表示方法の第2の実施形態を示す図である。

【図6】図5におけるパソコンと表示装置の動作を示すフローチャートである。

【図7】図5におけるパソコン画面での表示の一例を示す図である。

【図8】本発明による表示装置及び表示方法の第3の実施形態を示すブロック図である。

【図9】図8に示した第3の実施形態での表示画像の種類毎のデータ変換の主旨を示す図である。

【図10】図9に示した表示画像の種類に対する変換特性を示す特性図である。

【図11】図8における情報処理装置での表示画像の一例を示す図である。

【図12】本発明による表示装置及び表示方法の第4の実施形態を示すブロック図である。

【図13】図8におけるモニタで表示されるコントロールウインドウ内での表示内容の一例を示す図である。

【図14】図8におけるモニタで表示される色情報の一例を示す図である。

【図15】図8におけるモニタで表示されるコントロールウインドウ内での表示内容の他の一例を示す図である。

【図16】本発明による表示装置及び表示方法の第5の実施形態を示すブロック図である。

【図17】従来の表示装置及び表示方法の一例を示すブロック図である。

【符号の説明】

1 情報処理装置

2 表示装置

3 AD変換手段

4 記憶手段

5 DA変換手段

6 記憶手段

7 マイコン

8 表示手段

10 色変換手段

11 モニタ

12 ROM

21 データ読取手段

22 描画処理手段

23 情報保存媒体

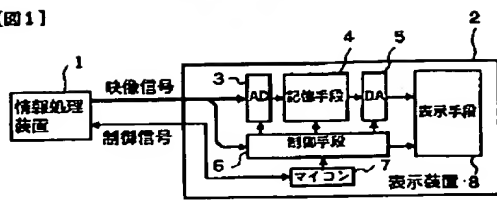
101, 201, 301 パソコン

102, 202 液晶プロジェクタ

103, 203 スクリーン

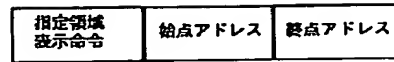
【図1】

【図1】



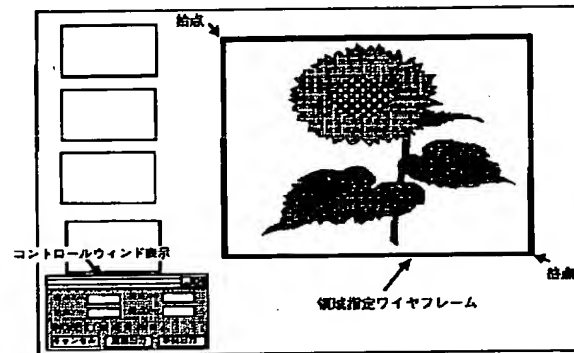
【図2】

【図2】



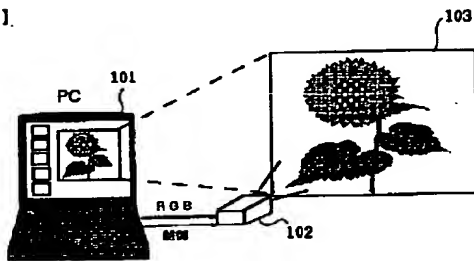
【図4】

【図4】



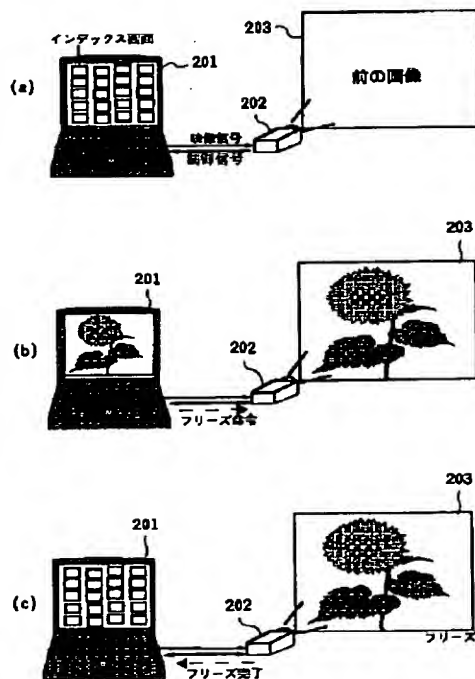
【図3】

【図3】



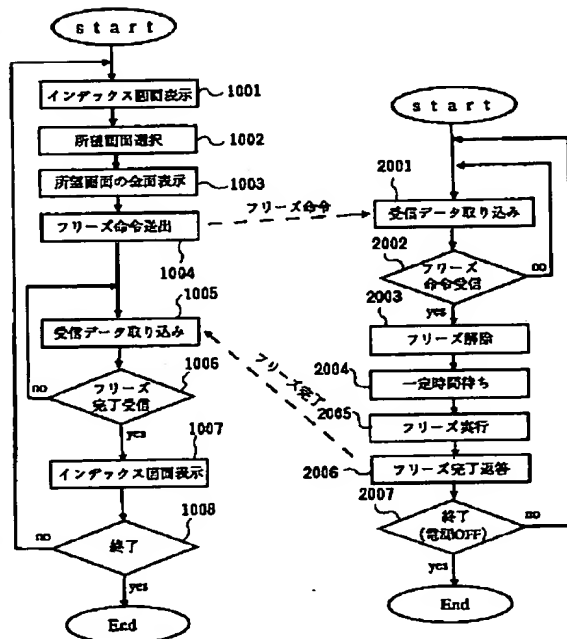
【図5】

【図5】



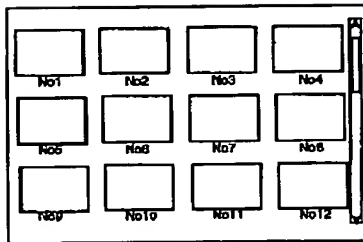
【図6】

【図6】



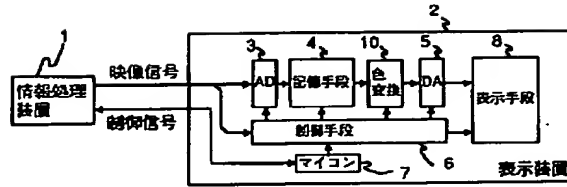
【図7】

【図7】



【図8】

【図8】



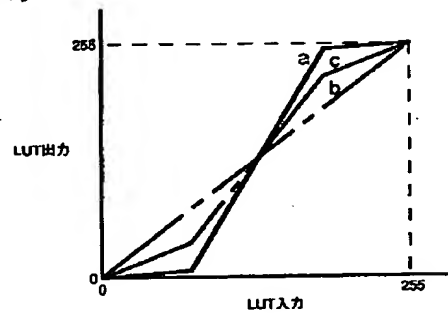
【図10】

【図9】

【図9】

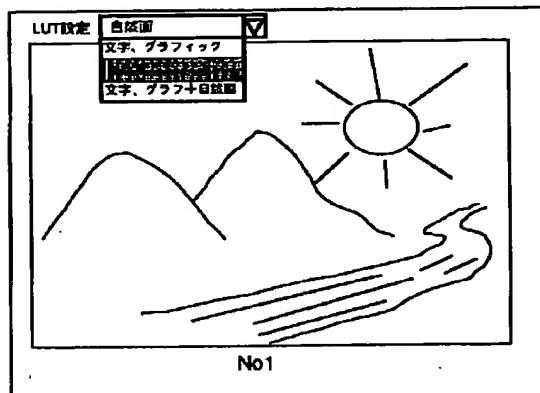
表示画像	データ変換の主旨	LUTデータ例
文字、グラフィック主体	飽和表示重視	a
自然画主体	階調表示重視	b
文字、グラフィックと自然画	飽和および階調重視の折衷	c

【図10】



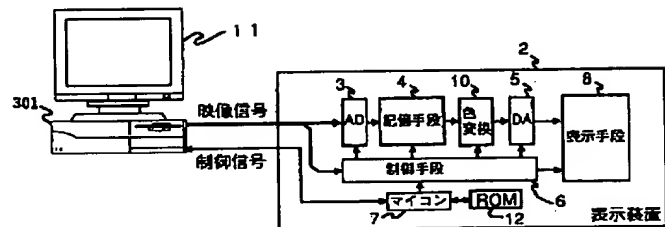
【図11】

【図11】



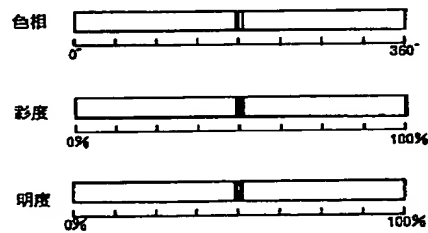
【図12】

【図12】



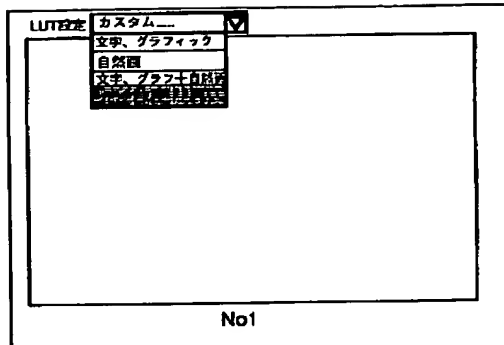
【図14】

【図14】



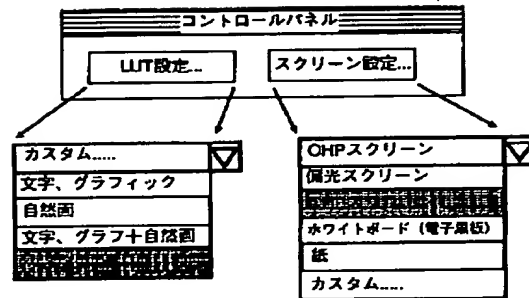
【図13】

【図13】



【図15】

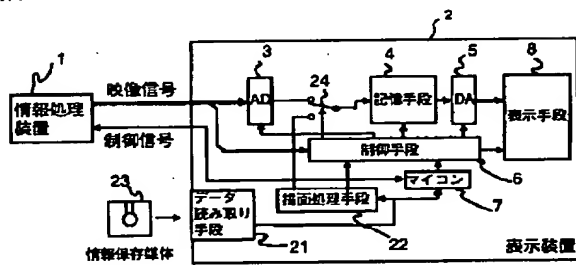
【図15】



【図17】

【図16】

【図16】



【図17】

